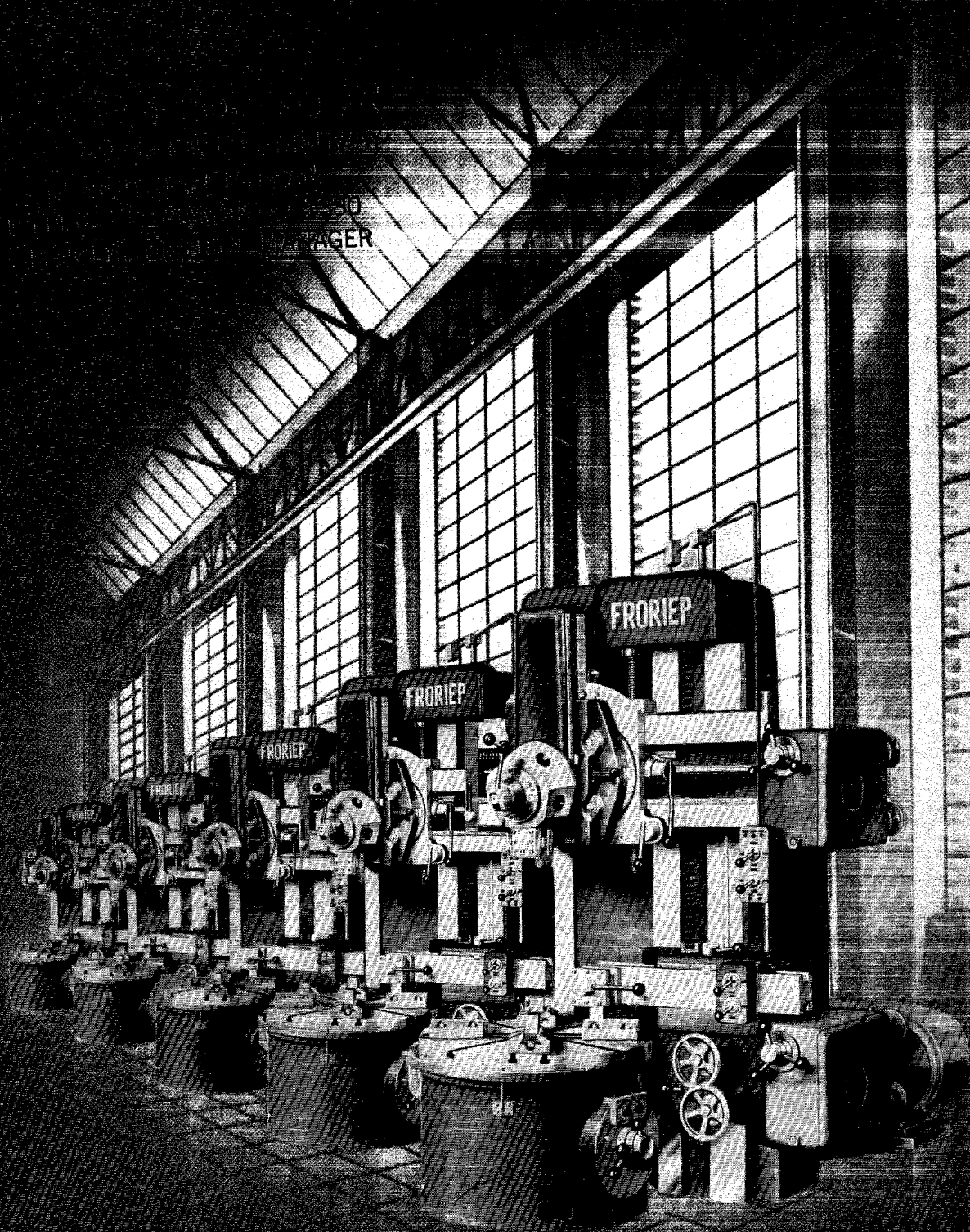


# Single Column Vertical Boring and Turning Mills



MASCHINENFABRIK

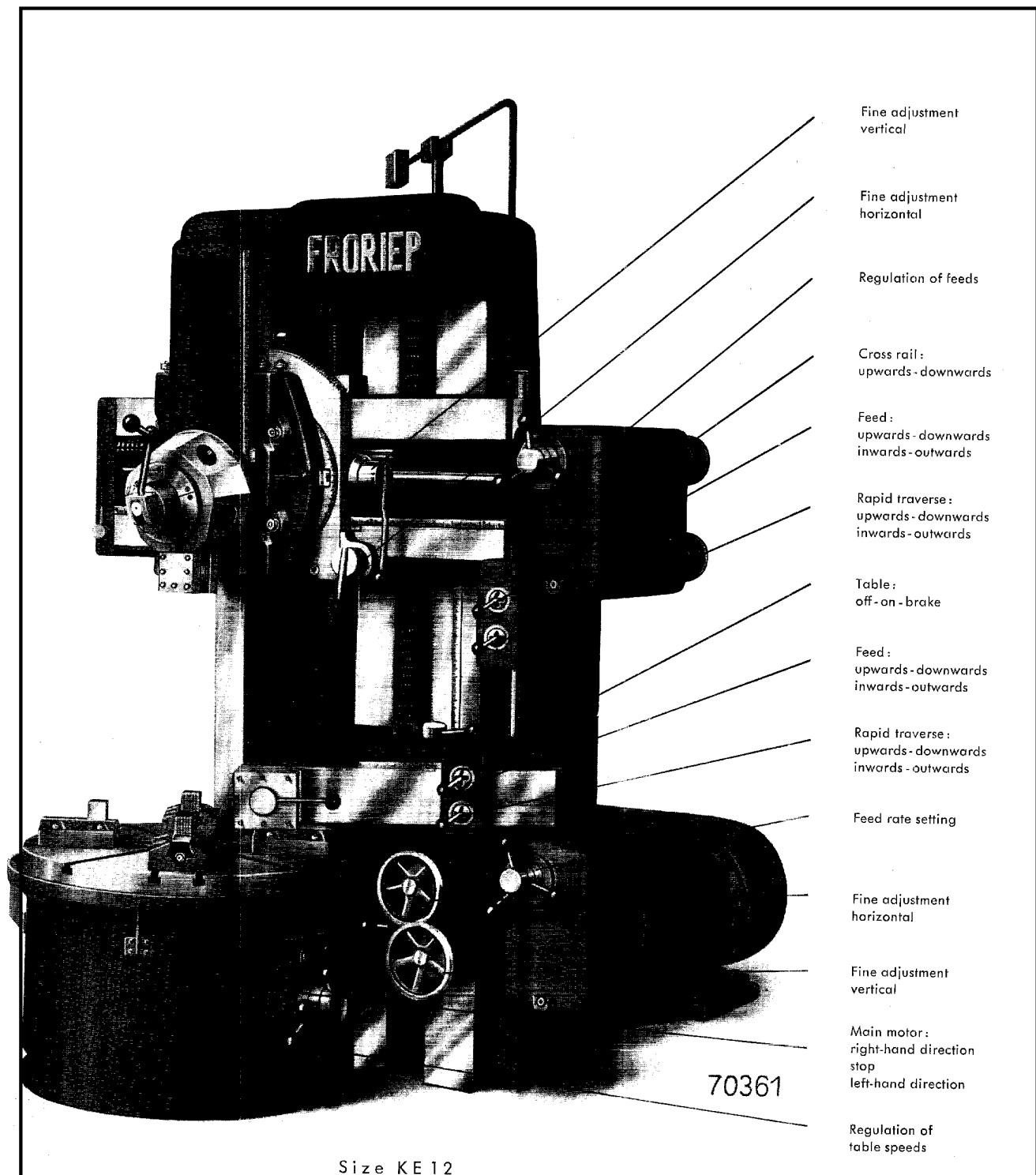
# FRORIEP

GMBH, RHEYDT (RHLd.)

# FRORIEP-Single Column Vertical Boring and Turning Mills

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all-electric centralized control



MASCHINENFABRIK **FRORIEP** GMBH, RHEYDT (RHLD.)

## Main Dimensions

Size		KE 10	KE 12	KE 14	KE 16
Table diameter	mm	1000	1250	1400	1600
Max. turning diameter with cross rail slide	mm	1150	1400	1600	1750
Max. turning diameter with side arm	mm	1050	1300	1500	1650
Max. turning height above table	mm	1050	1120	1120	1250
Max. weight of work piece	tons	3	4	4	5
Number of table speeds		18	18	18	18
Speed range of table	r.p.m.	3,6-180	2,8-140	2,8-140	2,24-112
Number of feeds, vertical and horizontal		12	12	12	12
Range of feeds per revolution, vertical and horizontal	mm	0,1-10	0,1-10	0,1-10	0,1-10
Vertical adjustment of tool slide on cross rail slide	mm	630	700	700	800
Number of turret tool holes		5	5	5	5
Diameter of turret tool holes	mm	80	80	80	80
Horizontal adjustment of tool slide on side arm	mm	550	675	775	850
Adjustment of cross rail, raising and lowering	mm/min.	600	600	600	600
Rapid traverse of heads and tool slides in all directions	mm/min.	2000	2000	2000	2000
Power of main motor	h.p.	50	50	50	60
Revolutions of main motor	r.p.m.	1450	1450	1450	1450
Power of motor for cross rail adjustment	h.p.	4,5	4,5	4,5	4,5
Power of motors for rapid traverse of heads and tool slides	h.p.	1,5	1,5	1,5	1,5
Max. cross-section of tools to be clamped	mm	40 x 40	40 x 40	40 x 40	40 x 40
Max. torque on table	mkgs.	1600	2000	2000	2500
Max. cutting force per head	kgs	4000	4000	4000	4000
Total chip section in steel 60 at 60 m/min. cutting speed	mm <sup>2</sup>	18	18	18	20-22
At mean turning diameter of	mm	630	800	900	1000
resulting total chip section	mm <sup>2</sup>	32	32	30	32
Space requirements of machine					
Width	mm	2300	2500	2600	3000
Depth	mm	3000	3200	3300	3700
Height	mm	3200	3500	3500	3650
Net weight of machine without electrical equipment	kgs	14500	16600	17500	20000

## Standard Accessories:

Counterweight for side arm and for tool slide on cross rail slide, four cast steel tool grips with hardened steel jaws, on tool holder on turret head, scales and verniers for all head movements; necessary spanners, cranks and safety devices, speed selector „Kienzle“.

## Special Accessories at extra cost:

Thread cutting equipment, taper turning equipment, tripping device, copying turning device by electric tracer control, cooling water equipment, centering table.

## Special design:

All sizes may be furnished with infinitely variable speed drive by PIV gears. Machine with increased height available.

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# FRORIEP SINGLE COLUMN VERTICAL BORING AND TURNING MILLS

rigid construction, simple control and high output

General	<b>FRORIEP single column Vertical Boring and Turning Mills</b> , manufactured in series production, are used everywhere where high cutting capacity, ease of control and special precision and surface smoothness are required. They not only allow full use of the best hard metal cutting tools, but also take into account the possibility of further increases of capacity to be expected with further development in cutting tools.
Base and Column	Bed and column are rigidly connected and rest with a wide base on the foundation. They are heavily ribbed so that even at heaviest cuts the machines work quietly.
Table	The table will be furnished with four cast steel tool grips with hardened steel jaws to be adjusted individually. As special equipment a centering table may be furnished, whereby the jaws can be adjusted either individually or simultaneously.
Table-bearings	The table with a steel bearing surface is supported by the square guide way inserted in the base and lined with high-grade bearing metal. The robust table spindle is held centrally by two adjustable double row cylindrical roller bearings. An adjustable ball thrust bearing serves to relieve the wearing surface.
Table drive	Under the table is a gear rim with helical teeth driven by a pinion on the vertical pinion shaft. The pinion shaft is driven by way of hypoid toothed bevel gears.
Main gear drive	The main gear is installed in an oil-tight gear box inserted from the back into the column and base. The gear wheels are hardened and ground, the shafts are supported in anti-friction bearings. The geometrically graduated table speeds are controlled by three centrally placed levers. An electromagnetic disc clutch with similar brake serves to engage and disengage. Control is by push-button.
Cross rail	The vertical adjustment of the cross rail is effected by a special traversing motor.
Heads	The two heads, namely the cross rail slide and the side arm, are completely independent from each other. Each head has a special feed case containing the feed and rapid return gears. The geometrically graduated feeds for vertical and horizontal travel of the tools are controlled by three centrally placed levers. Engaging of all feeds and rapid returns is effected by single lever control from operator's stand. The fine adjustment of the heads is located in such a manner on the slides that even with the smallest workpieces the tool cutting edge may be watched closely. The pentagon turret can be easily and exactly released, loosened and further divided with the help of a single lever.
Thread cutting and taper turning	The machine may be furnished with thread cutting or taper turning device as special equipment. For this purpose a quadrant with change gears will be attached to the right of the feed box of the cross rail slide.
Scales and dials	Scales are provided to read off horizontal and vertical movements of the heads, and dials for reading the fine adjustment. Graduation on the cross rail slide is provided for showing the inclination of the tool slide.
Lubrication	Lubrication of the machines is so arranged that each unit is lubricated separately. The following are equipped with automatic circulating lubrication: gear box, support and table bearings as well as the two feed boxes. The following are lubricated from common hand central lubricator: both heads, column and cross rail guides as well as cross rail adjusting gear.

For Double Column Vertical Boring and Turning Mills please ask for special Leaflet!

MASCHINENFABRIK **FRORIEP** GMBH, RHEYDT (RHLD.)

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